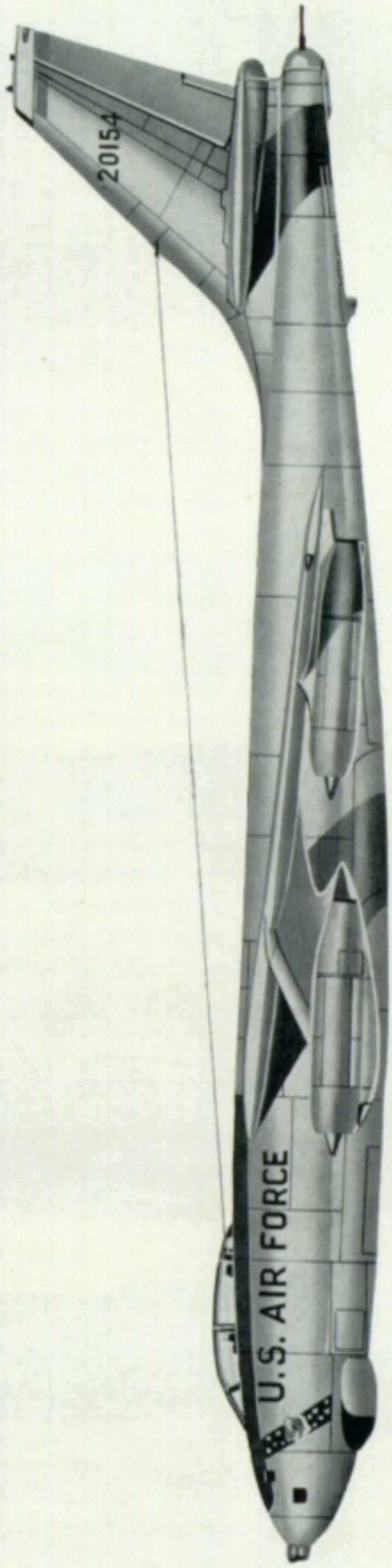
PROFILE
PUBLICATIONS

The Boeing B-47

NUMBER 83
TWO SHILLINGS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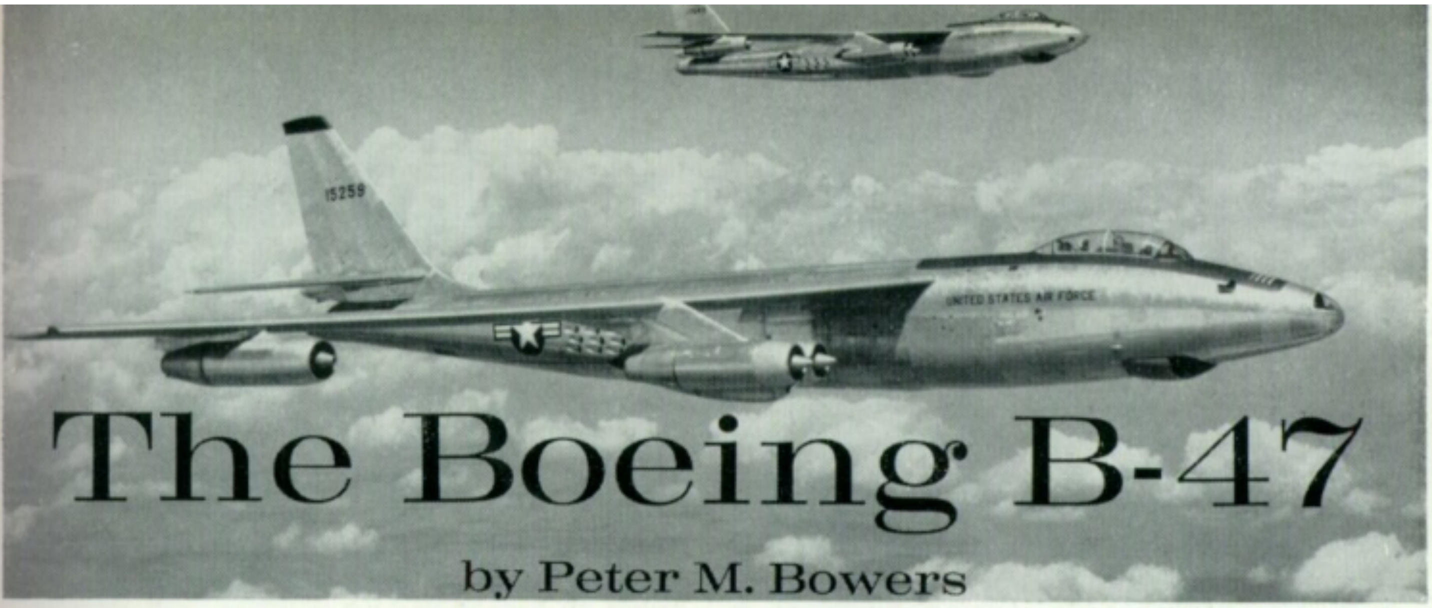
U.S. AIR FORCE

The Boeing B-47

by Peter M. Bowers



The second RB-47E flying with a standard B-47E clearly demonstrates the longer nose of the reconnaissance model. (Photo: Boeing)

December 17th 1947, saw the first flight of one of the world's truly revolutionary aeroplanes—the Boeing XB-47. It turned out to be revolutionary in many ways. Aerodynamically, it featured a swept-back wing, the first applied to any but a fighter-category aircraft, which, combined with the thrust of six jet engines and extremely clean aerodynamic design again brought the speed of the bomber up to that of the contemporary fighter. Boeing had accomplished this feat once before, when the B-9 monoplane bomber of 1931 outran the biplane fighters of its day. As had the B-9, the XB-47 exerted great influence on subsequent designs, both military and civil, and the present-day jet transports of America and Europe can trace their origins to the two prototypes of the B-47 and the 2,030 production models that followed them.

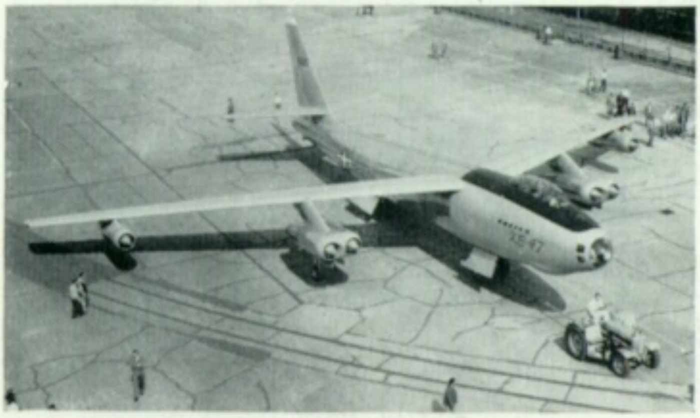
After the B-47 was ordered into large-scale production in 1948, the government-owned Boeing Plant II at Wichita, Kansas, was chosen for its manufacture since the Seattle plants were committed to the production of B-50s, C-97As, commercial "Stratocruisers", and the conversion of obsolescent B-29s to KB-29P aerial tankers. When production beyond the capability of the Wichita facility was desired at the time of the Korean war, Douglas and Lockheed were requested to manufacture B-47s in their own plants. The Lockheed versions, designated B-47-LM, were built in the former Bell plant at Marietta, Georgia, which had been used to manufacture Boeing-designed B-29s during W.W.II. The Douglas models, designated B-47-DT, were manufactured in Douglas' branch plant at Tulsa, Oklahoma, which had been built during W.W.II. The B-47s built by Boeing at Wichita were designated B-47-BW to distinguish them from Seattle-built Boeings, which used the suffix letters -BO.

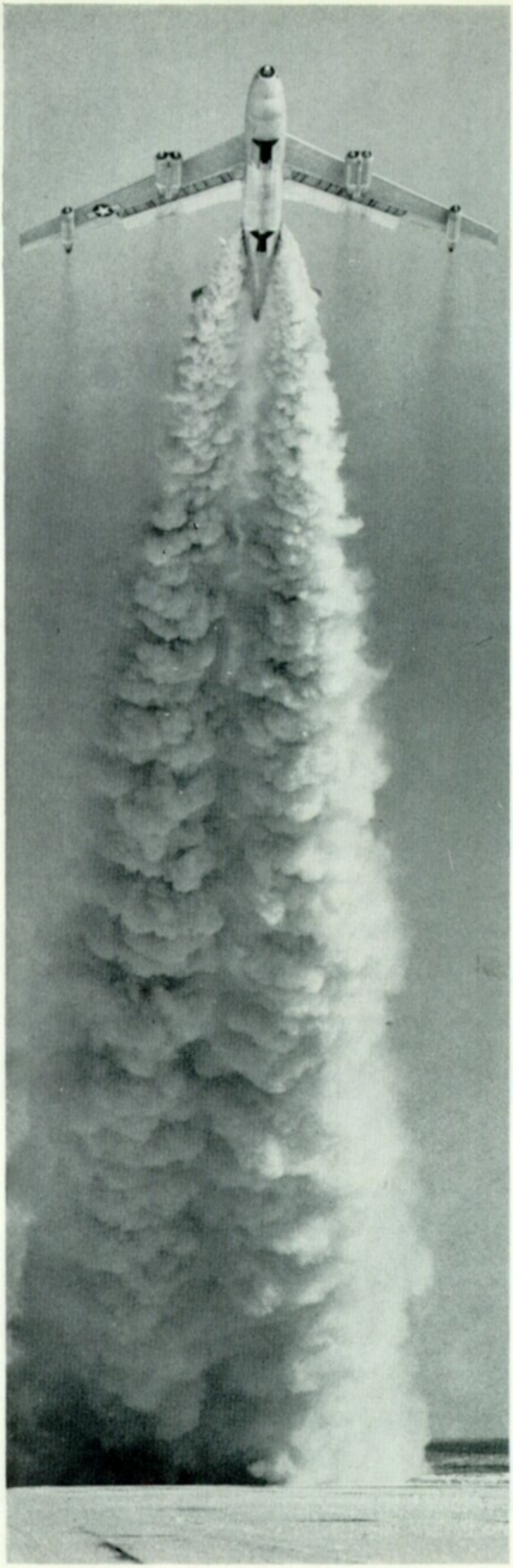
ORIGIN OF THE DESIGN

The XB-47 (Boeing Model 450) was the result of design study contracts issued by the U.S. Army Air Force in 1943, calling for jet-propelled light bombers or fast long-range reconnaissance machines. Jet propulsion was beginning to prove itself in fighter-type aircraft at the time, and the extension of its advantages to larger designs was considered desirable. However, the war ended before any of the American jet designs, fighter or bomber, was able to go into action.

The XB-47 that took to the air in 1947 was not the first design that Boeing had developed to meet the specification although all had the same military designation. Many had been developed, evaluated, and rejected, with work starting anew along different lines. At first, the problem of adapting jet propulsion to a "big" aeroplane was regarded as a fairly simple one—the engines could be put in relatively conventional nacelles and hung on the wings as direct substitutes for the traditional piston engines. The studies soon proved the fallacy of this, and all manner of combinations were tried. From the aerodynamic and structural standpoints, six jet engines buried in the fuselage seemed to be the optimum design, and one paper design progressed quite far in this direction until the military rejected the feature on the grounds of vulnerability of the aircraft and its fuel system to damage from engine fire or a disintegrating turbine wheel. The final design used six engines in suspended nacelles, thirty-five-degree swept-back wing, a unique "Bicycle" landing gear, and was so fast that the only defensive armament considered necessary was a tail turret with two ·50 calibre machine guns.

The first XB-47 soon after roll-out from the Seattle factory in September 1947. Only the two prototypes were built in Seattle. (Photo: Boeing)





DESIGN DETAILS

Although the XB-47 presented a radical appearance when it first appeared, no single feature was radical or even new in itself. It was the combination of so many unorthodox features, previously confined to purely experimental or research types, that made the XB-47 distinctive. The principal features are described in the following paragraphs.

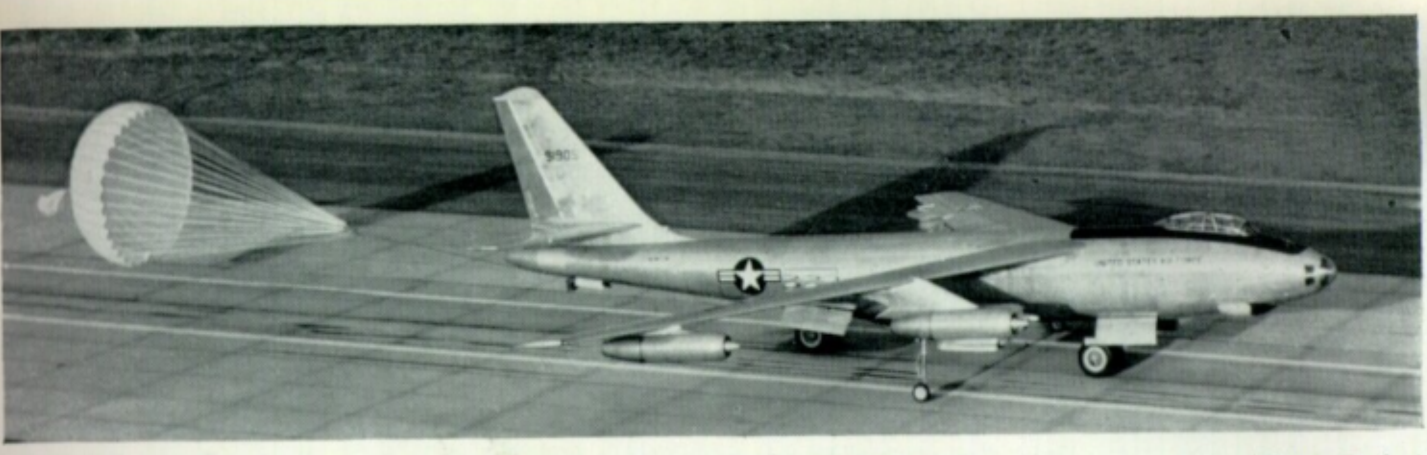
THE WING

The original wing chosen for the XB-47 was a straight design. Consideration was given to the use of sweepback when Boeing engineers touring Germany in the wake of the Allied Armies found data in the German research centres that amplified information already on hand about the desirable characteristics of swept wings on high-speed aircraft. Following telegraphed orders from Europe, Boeing engineers adapted swept wings to the XB-47 design and tested them in the wind tunnel. The results justified a request to the Air Force for a major design change, which was approved.

The thirty-five-degree swept wing used on the XB-47 was not entirely new, but it was the first applied to a large aircraft. Previously, only two other designs had flown with such a wing; the propeller-driven Bell L-39, a pure research machine converted from a P-63 "King Cobra" fighter, and the North American XP-86, a single-jet fighter prototype that beat the XB-47 into the air by only a month. The function of the swept wing was to add speed to the aeroplane by delaying the formation of the shock waves that formed as the air passing over the wing approached the speed of sound. Various angles of sweep were effective for this purpose, but wind tunnel testing determined that the angle of thirty-five degrees was the optimum from a structural and aerodynamic standpoint.

Again for speed, the airfoil section was thin. Combined with the extremely high aspect ratio of eleven, far higher than anything ever before used on any standard aircraft but a sailplane, this gave still greater aerodynamic efficiency but introduced serious design problems in several directions. First, the resulting flexibility of the structure brought about control problems—critics maintained that conventional ailerons would serve as control tabs when moved, twisting the wing structure in the opposite direction and producing reversed control action. To offset this possibility, lateral control by means of spoilers was tried on the B-47 prototypes, but it proved to be unnecessary and the new bomber worked perfectly well with conventional ailerons. Second, the thin wing left no space for fuel tanks or the stowage of conventional landing gear. As a result, both of these items were stowed in the fuselage. For take-off and landing, Fowler flaps were fitted to the wing. These provided a means of actually increasing the wing area as well as increasing lift coefficient. They moved aft a considerable distance from their nested position in the underside of the wing as well as moving downward.

The first XB-47 demonstrates the steep take-off angle made possible by the eighteen internally-mounted JATO bottles.
(Photo: Boeing)



The No. 6 B-47A demonstrates the use of the thirty-two-foot diameter deceleration parachute. (Photo: Boeing)

The Fowler flap, named for its inventor, was first used on the Lockheed Model 14 transport of the immediate pre-W.W.II years and its famous military derivative, the "Hudson" bomber and contributed greatly to the success of Boeing's own B-29 "Superfortress" design of W.W.II.

LANDING GEAR

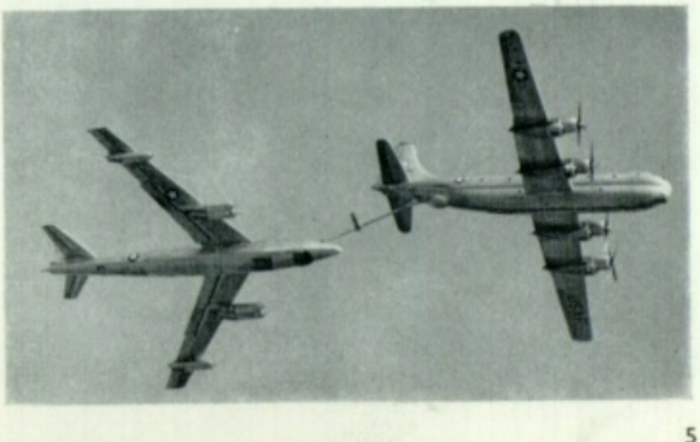
Since it couldn't be stowed in the wing, the landing gear of the XB-47 had to be accommodated in the fuselage, which brought up other design problems. It could not be allowed to intrude into the bomb bay, so it had to be located forward or aft of that area. The final result was that it appeared in both places, one two-wheel main unit being installed forward and one aft to form a "Bicycle" arrangement. This had appeared from time to time in various experimental designs from about 1911, but had never before gone into production. The most recent application had been made by the Glenn L. Martin Company to the XB-26H, an experimental conversion of a standard B-26 "Marauder" bomber used to test the design. Since the main weight-supporting wheels were on the aircraft centre-line, lateral stability was provided by outrigger wheels that were mounted under the inboard nacelles and retracted into them for flight. Each set of main wheels was so far from the centre of gravity of the machine that the normal "Rotation" method of take-off was impossible. Consequently, the design was arranged so that it rolled forward, took off, and landed at the same attitude.

POWERPLANT

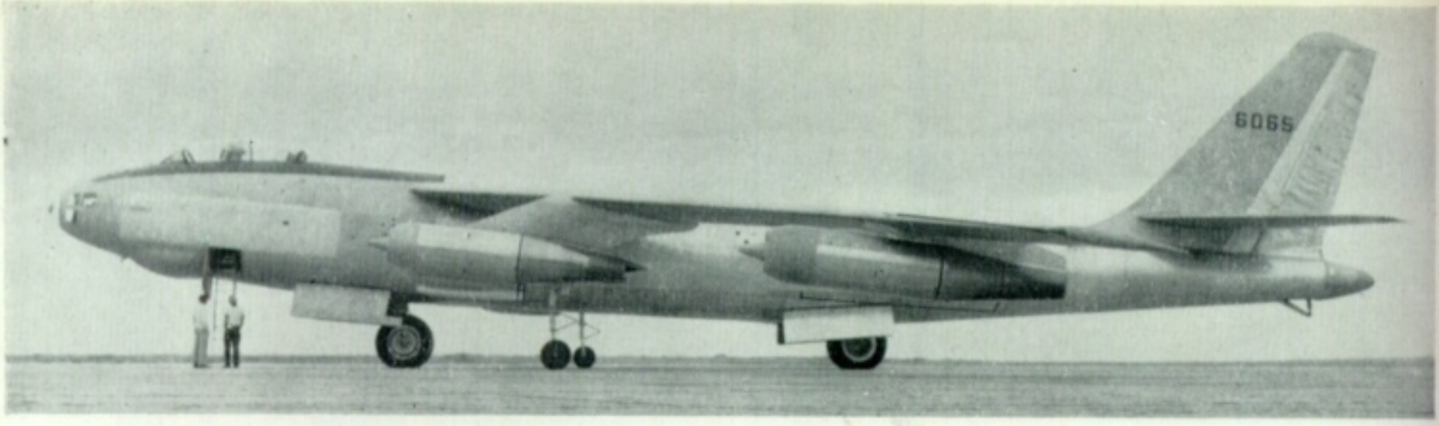
The jet engines chosen for the XB-47 were General Electric J-35s, which were soon changed in 1949 to 5,200-lb. GE-J-47s. This is easy to remember—J-47s in the B-47. Early contemporary references stating that Allison engines were used in the prototypes are in error. When different manufacturers were put to building the same jet engine, the actual manufacturer, other than the designer, was made part of the designation. General Electric-designed J-47s, also built by G.E., were designated J-47-GE, followed by the dash number that indicated the series of the engine. The early J-35s produced 4,000 pounds of thrust each. Their location in the final XB-47 design was the result of much study and experiment. Engines buried in the fuselage were ruled out by the military and those mounted to the wing in traditional nacelles were ruled out by Boeing's aerodynamicists as seriously compromising the efficiency of the wing. The use of external pods mounted on struts was finally chosen, and much testing was done in the wind tunnel to determine the optimum locations of the engines relative to the wing from the structural and aerodynamic standpoints. In the final design, two engines were paired in a double nacelle suspended from a single strut on each side of the fuselage while each outboard engine was mounted close under each wingtip. This was a really radical innovation, as designers of large multi-engine aircraft had previously tried to keep the engines as close to the aircraft centre-line as possible to ease the trim problems resulting from operation with one engine out.

Workers at the Boeing Wichita plant thought something was wrong when sets of B-47 inboard pods began to appear on the production line without provisions for the outrigger wheel on them. It turned out that the Air Force had directed that the pods be installed on the contemporary Consolidated-Vultee B-36 Intercontinental bomber. The first model so equipped was

A Lockheed-built B-47E with the sixteen-foot diameter "Ribbon" approach parachute during landing. (Photo: Peter M. Bowers)



The thirty-five-degree swept wing of an RB-47E provides marked contrast to the straight wing of the Boeing KC-97F tanker. (Photo: Boeing)



The No. 1 XB-47 shows the ground angle established by the tandem landing gear. (Photo: Gordon S. Williams)

the B-36D, and the feature was retained on all subsequent models.

B-47 inboard pods were also used by the Air Force to create the first American jet transport. Two were installed on a Chase G-20 all-metal assault glider, resulting in the XC-123A transport. The jets were not suited to the design, but the piston engines fitted to another G-20 which became the XC-123 were, and this version was placed in large-scale production by Fairchild as the C-123B.

JET-ASSISTED TAKE-OFF

The poor acceleration characteristics of the jet engine were responsible for some unconventional equipment features of the XB-47. With a gross weight nearly double that of the wartime B-29, the B-47 needed a very long take-off run. The jets put out more total power than did the B-29's piston engines, but it took a long time for this power to develop (one pound of jet thrust is equal to approximately one horsepower at a speed of 375 miles per hour; less below and more above). Since more power was needed at low speed, an ingenious system was developed whereby eighteen of the 1,000-lb. thrust solid-fuel rocket units developed during W.W.II to help boost heavily loaded flying boats off of the water were mounted in the fuselage behind the wing. Since the auxiliary-thrust units, soon named JATO for Jet-assisted Take-off, were mounted externally on the flying boats, they could be dropped after take-off. On the XB-47 and subsequent models into the early B-47Es, the discharged units had to be carried along as so much dead weight. The later Es, and earlier models that were updated through modification, were fitted with a total of thirty-three 1,000-lb. JATO units on an external rack that could be dropped after take-off.

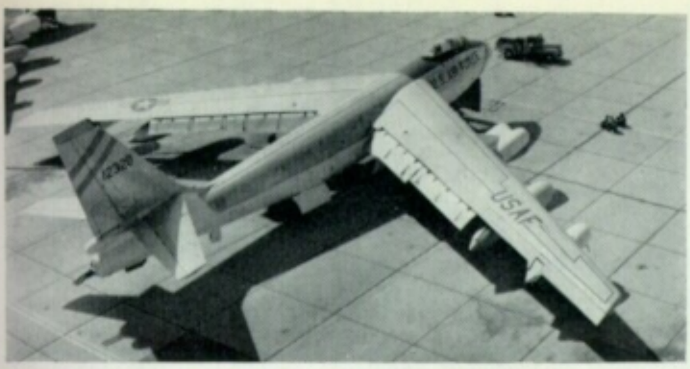
The No. 1 B-47A showing the original long bomb bay. (Photo: Boeing)

Below: *B-47B dropping eight conventional 500-lb. bombs from short bomb bay. Note how quickly the doors return to the closed position.* (Photo: Boeing)

BRAKING AND DECELERATION PARACHUTES

The great weight and clean design of the B-47, coupled with the lack of reverse-thrust features on the jet engines, introduced further operating problems to the new design. During W.W.II, the crews of bombers with their braking systems shot out had slowed their landing runs by deploying personnel parachutes from the side gun positions. The Germans had also tested heavy-duty parachutes as an actual aircraft braking device during W.W.II, and the idea was developed and perfected on the B-47. A thirty-two-foot diameter "Ribbon" parachute was stowed in the bottom of the fuselage forward of the tail guns and was deployed immediately after touchdown to help slow the aircraft. It soon became customary to deploy the "Drag Chute" as it came to be called, while the B-47 was still a few feet in the air.

The poor acceleration characteristics of the early jets made a go-around following a refused landing a risky affair. In order to have the jet engines up to speed for such an emergency, a smaller sixteen-foot diameter "Ribbon" parachute was developed to serve as an air brake and bring the B-47 down to landing speed at the higher power setting. Called the "Deceleration Chute", this was deployed on the downwind leg of the landing pattern and remained open until after the landing was completed. If it became necessary to go around, the parachute was jettisoned by the



B-47B-II is B-47B modified to B-47E standard. Note how Fowler flaps increase wing area prior to assuming lowered position. (Photo: Gordon S. Williams)

pilot. Both chutes were jettisoned at the end of the runway before the B-47 taxied in and were recovered and repacked by the ground crews.

FUEL SYSTEM

Another undesirable characteristic of the jet engine was its terrific fuel consumption compared to the piston engine. This was a serious drawback for a powerplant to be used in a long-range machine such as a bomber. Even the enormous tankage of the B-47, 17,000 U.S. gallons (compared to 5,500 gallons for the B-29) was insufficient to give the B-47 the desired range. This was stowed in the upper portion of the fuselage above the bomb bay and for a considerable distance aft, creating a serious balance problem as fuel was used up. Consequently, various systems of in-flight re-fuelling (IFR) then under development were tried. The B-47Es and earlier modified models were equipped to use the Boeing-developed "Flying Boom" system, with the receptacle at the very nose of the B-47. The first tanker aircraft used to re-fuel production B-47s were propeller-driven Boeing KC-97s, but these were soon replaced by jet-propelled Boeing KC-135s.

ACCOMMODATION

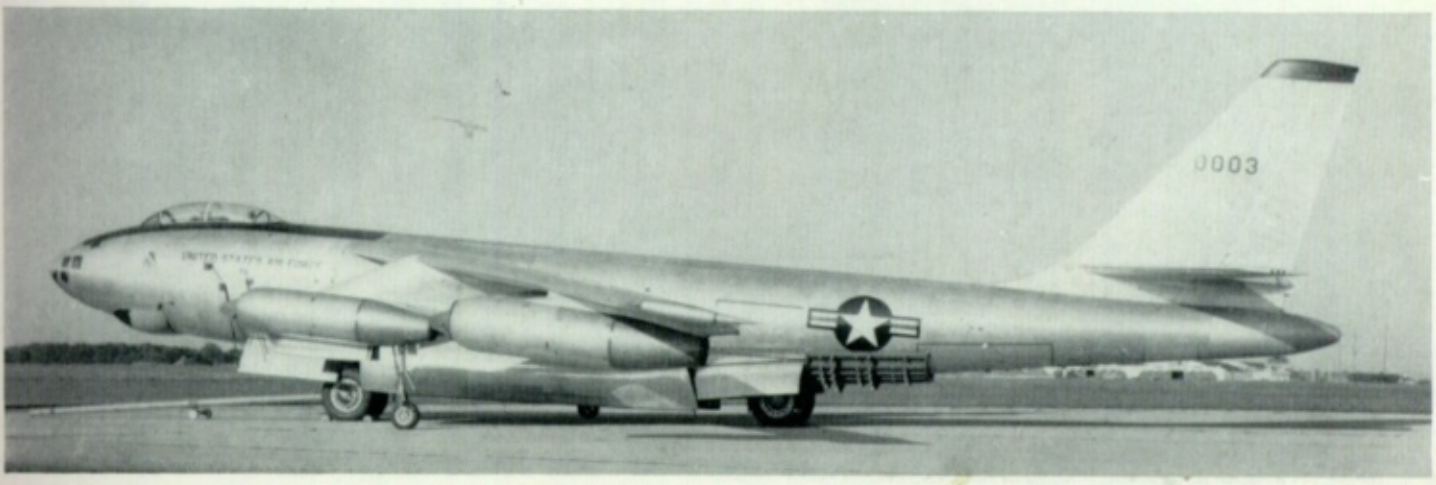
For all its weight, the B-47 has a remarkably small crew—three men, who serve as pilot, co-pilot/tail gunner, and bombardier/navigator. All three are housed in a pressurised forward compartment forward of the wing and bomb bay, the pilot and co-pilot under a long fighter-like blown Plexiglass canopy and the bombardier in the conventional nose bombing station. In some special reconnaissance and electronics countermeasures variants, the bomb bay is converted to a crew station and additional personnel are carried there. Ejection seats are provided for the crew of the B-47E and on; the pilot and co-pilot eject upward and the bombardier ejects downward.

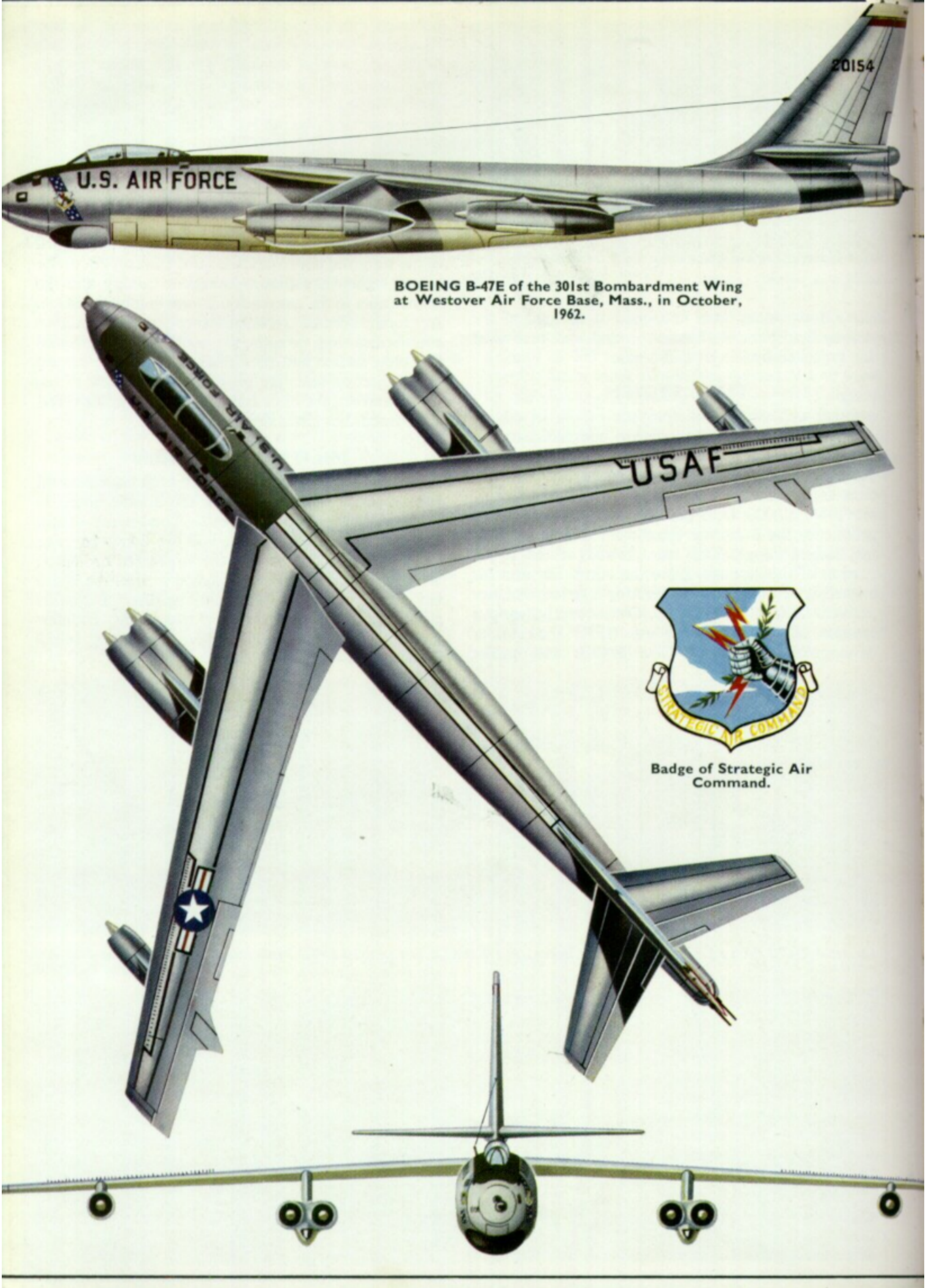
MILITARY FEATURES

The XB-47 was designed to carry both conventional bombs and the early forms of the atomic bomb in existence at the time it was built. Total bomb weight capacity was 20,000 pound, and the bomb bay was quite long to accommodate the large-sized ordnance. When the atomic bombs decreased in size, the bomb bay was made considerably smaller. Elaborate electronic gear is carried for navigation, countermeasures, and bomb and defensive gun-aiming. Initial

(continued on page 10)

Above: *A B-47B takes off.* (Photo: Boeing). Below: *B-47B used to test external JATO bottle racks as used on late B-47Es and converted B-47B-IIs.* (Photo: Douglas D. Olsen)

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BOEING B-47E of the 301st Bombardment Wing at Westover Air Force Base, Mass., in October, 1962.

Badge of Strategic Air Command.

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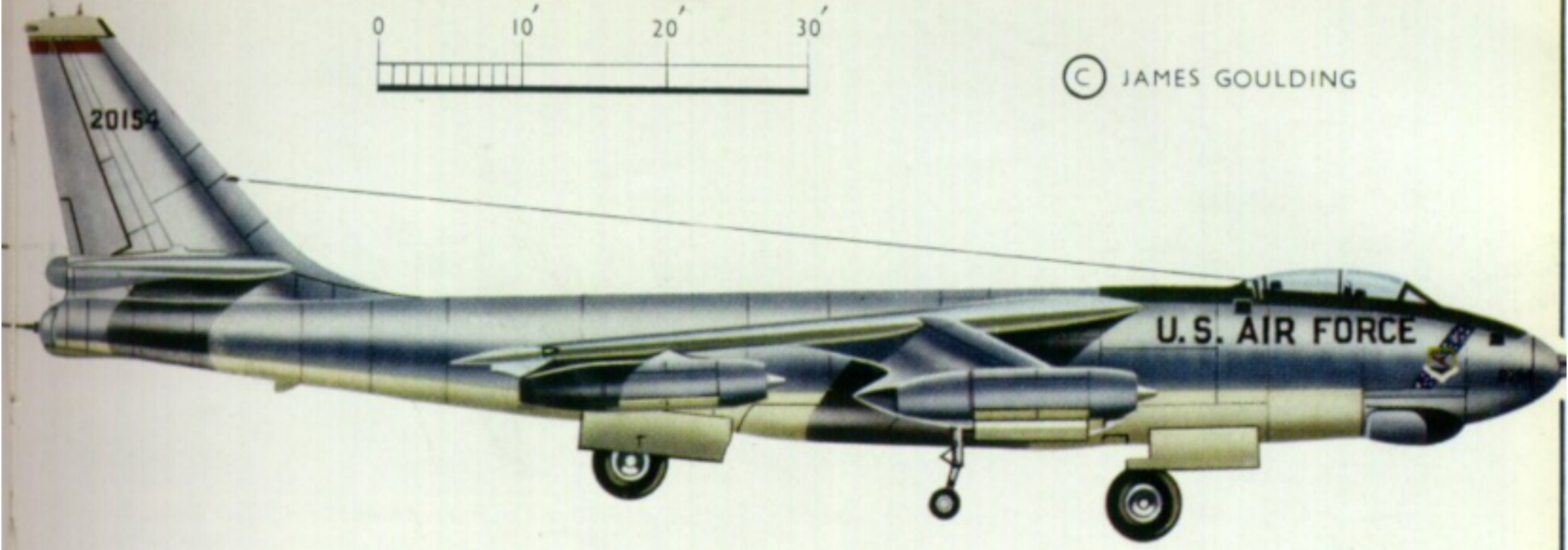
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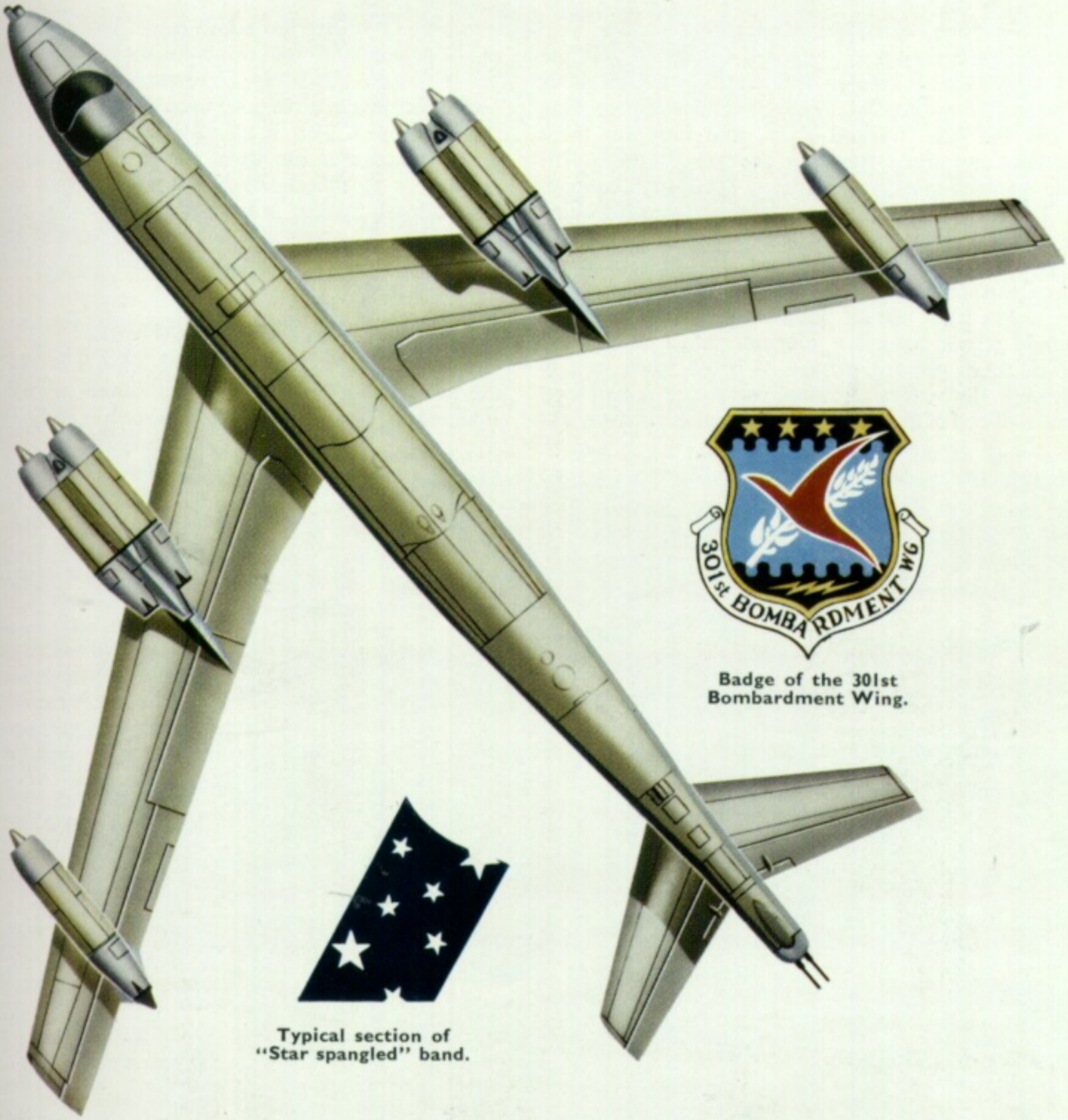
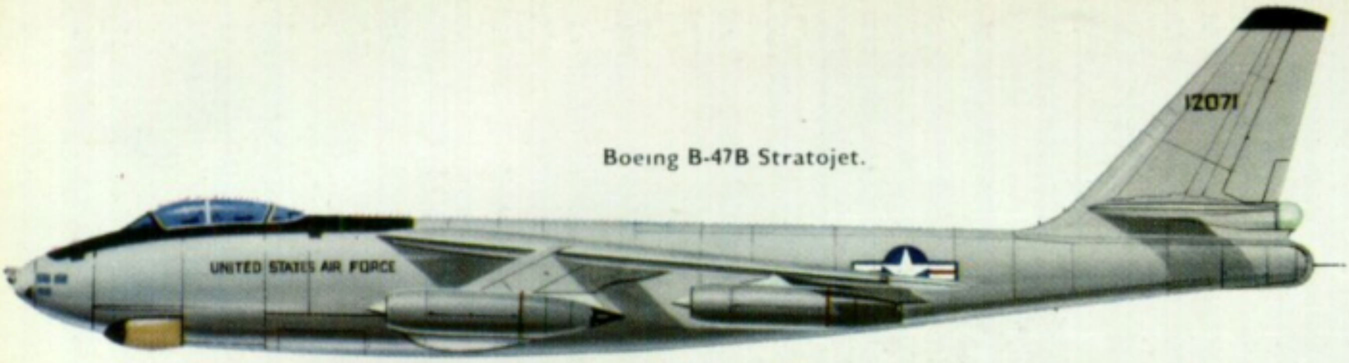

301st BOMBARDMENT WG

Badge of the 301st Bombardment Wing.

Typical section of "Star spangled" band.

Boeing B-47B Stratojet.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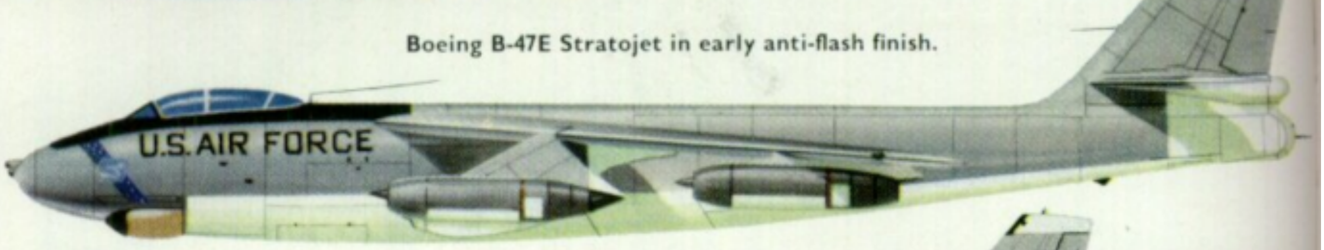
Boeing B-47E Stratojet in early anti-flash finish.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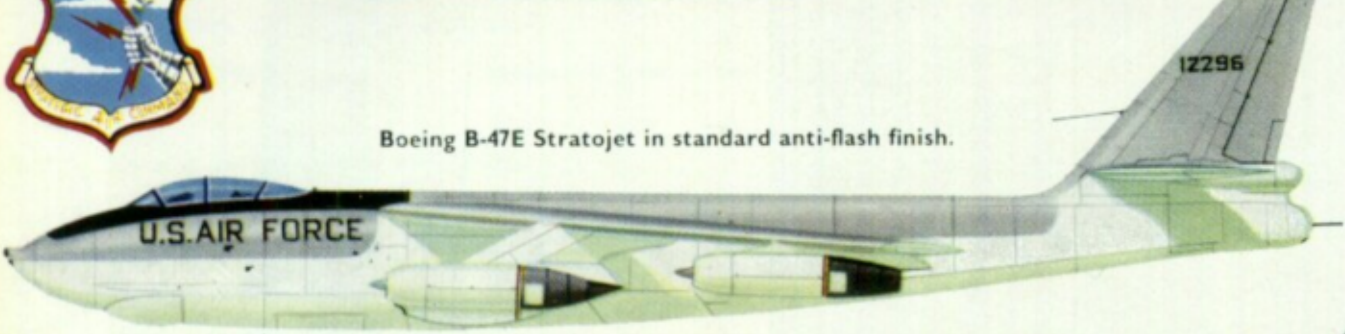
Boeing B-47E Stratojet in standard anti-flash finish.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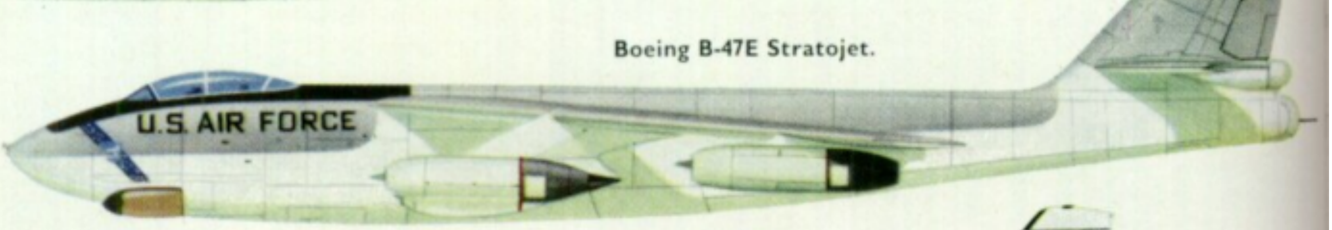
Boeing B-47E Stratojet.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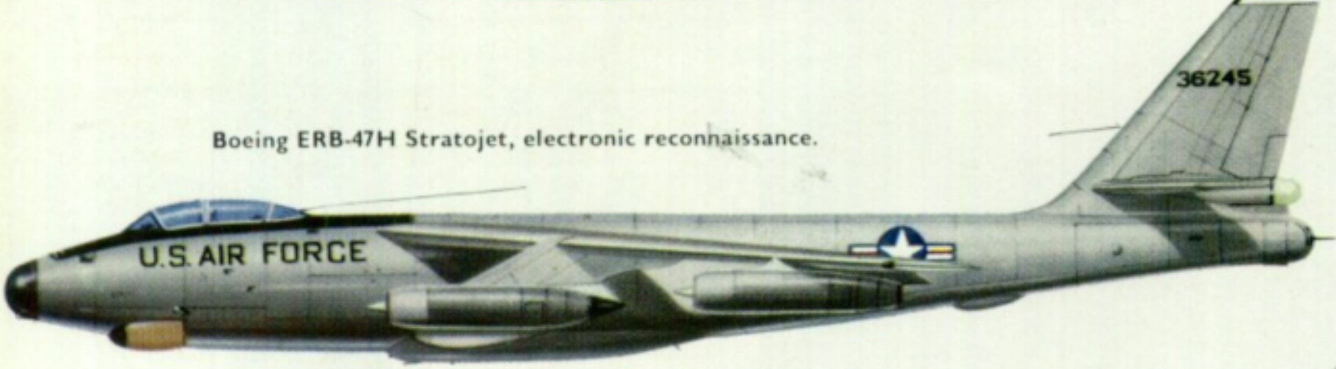
Boeing ERB-47H Stratojet, electronic reconnaissance.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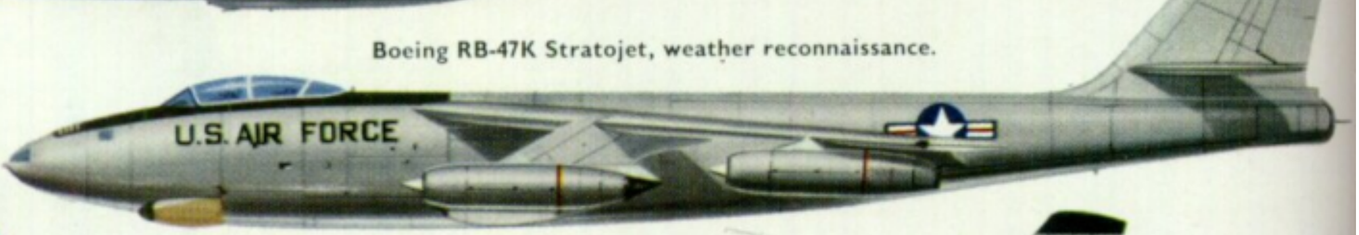
Boeing RB-47K Stratojet, weather reconnaissance.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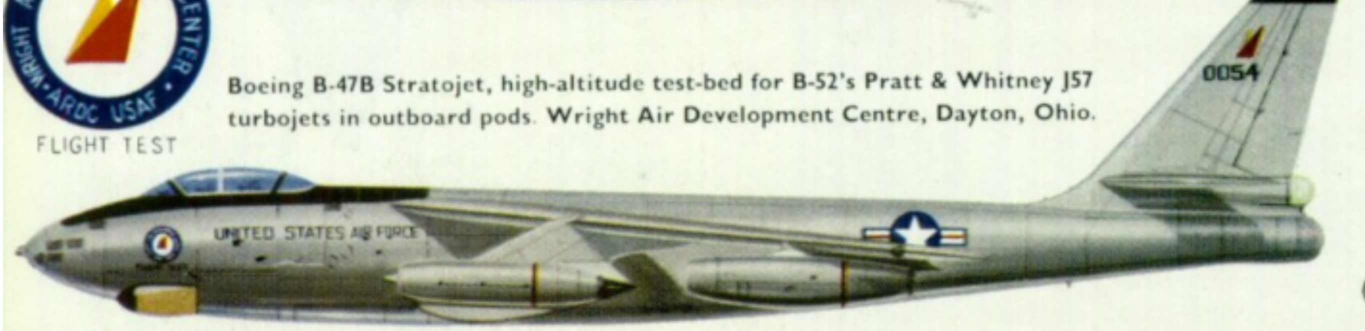
FLIGHT TEST

Boeing B-47B Stratojet, high-altitude test-bed for B-52's Pratt & Whitney J57 turbojets in outboard pods. Wright Air Development Centre, Dayton, Ohio.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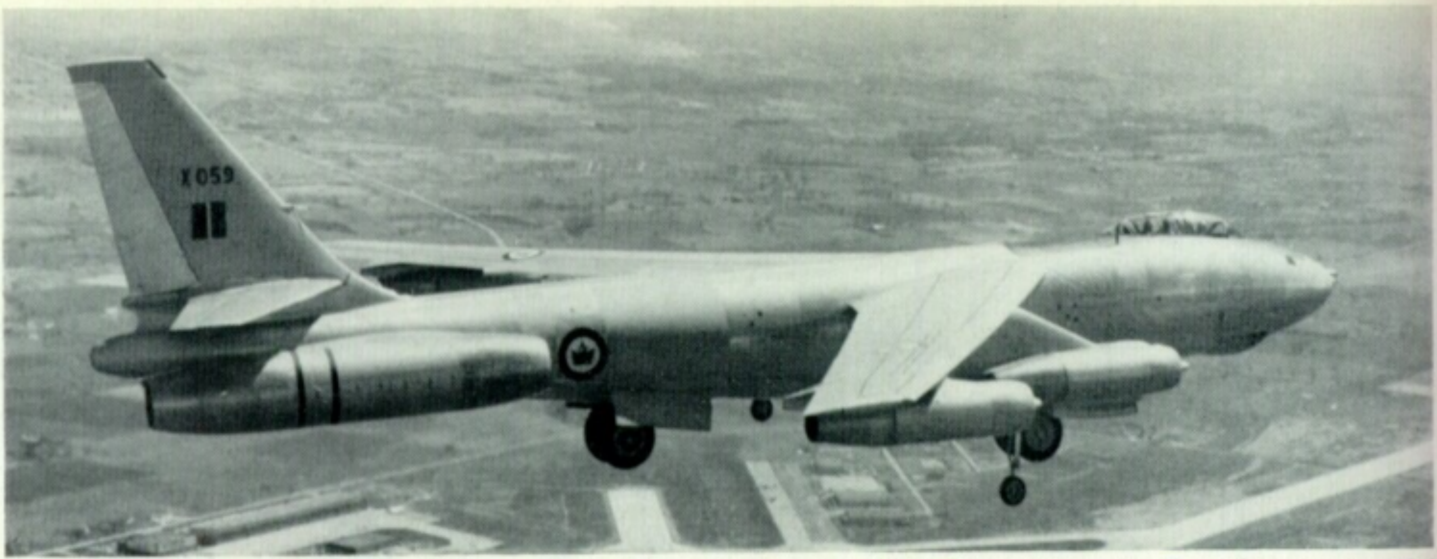


A B-47B loaned to Canada for testing of the Canadian-built Orenda "Iroquois" 20,000-lb. thrust jet engine. The airframe was modified by Canadair, Ltd., and designated CL-52. (Photo: Orenda)

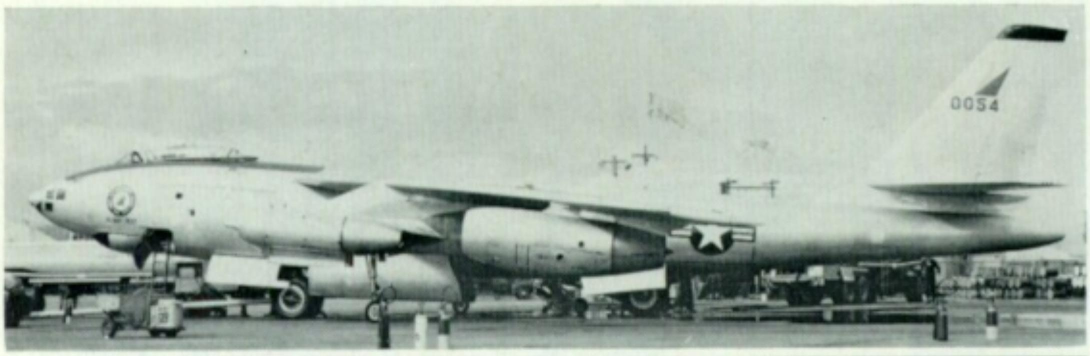
tail armament consisted of a pair of ·50 calibre machine guns in a turret remotely controlled from the cockpit. These could also be operated by an A-5 radar fire-control system that detected targets approaching from the rear, tracked them, and fired on them without any supervision from the crew. In the B-47E, the machine guns were replaced by 20-mm. cannon.

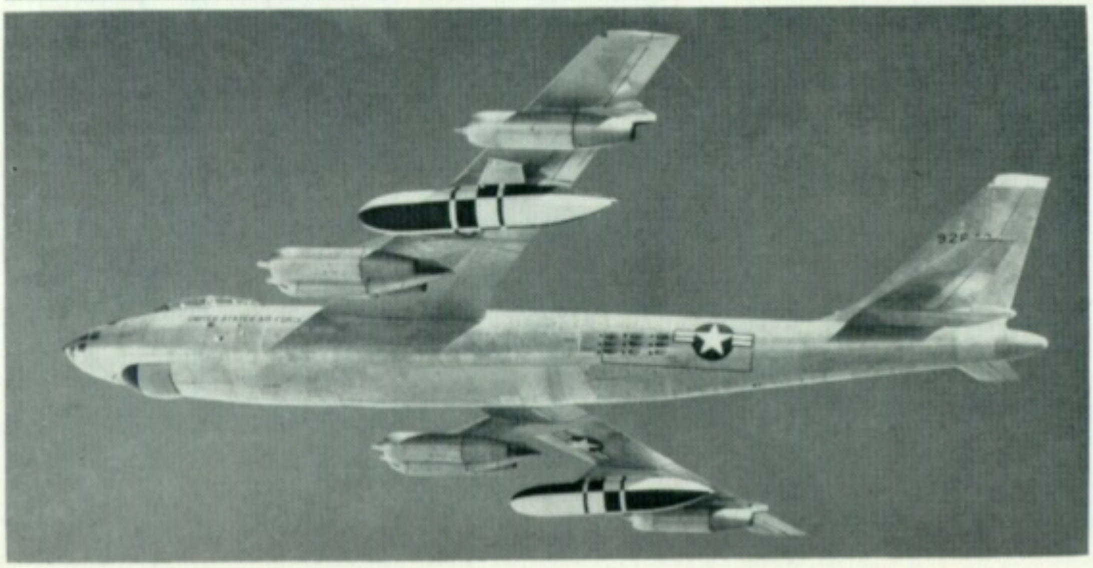
The B-47 was adapted to numerous duties for which it had not originally been designed. Conceived as a high-altitude strategic bomber, it was modified through extensive strengthening of the wing to be used in a low-level tactical lob-bombing rôle, where it would streak toward a pinpoint target at tree-top level, zoom upward, release its bomb when passing through the vertical position, complete the half-loop and half-roll of the classic Immelmann manœuvre, and streak away before the bomb came down. The first public demonstration of this tactic took place in 1957.

For those B-47s equipped to carry atomic bombs, a special colour scheme (also used on B-36s and B-52s) was developed. This is an all-white coating for the undersurfaces and the lower half of the fuselage. Its purpose is to reflect the heat and radiation of an atomic blast, thereby protecting the aircraft structure to a degree. The normal military markings and lettering are not applied to surfaces covered with the white reflective paint.

DESIGN DEVELOPMENT

The major B-47 models, from the XB-47s of 1947 to the final Es and their variants produced in 1956 by Boeing and Douglas and by Lockheed in early 1957, are detailed in the following paragraphs. Except for the RB-47E, only those models distinguished by the adoption of separate series letters are described (B-47A, B-47B, etc.). Special-purpose variants, such as QB-47 radio-controlled drones, TB trainers, and WB-47 weather-reconnaissance conversions, are too numerous to detail in a publication this size.





Top left: *A B-47B of Wright Air Development Centre fitted experimentally with 10,000-lb. thrust J-57 engines, the type used in early B-52s, in the outboard positions.* (Photo: Boeing)

Left: *A B-47B fitted with an early set of 1,780-gallon auxiliary tanks. The odd colouring is to help photographic studies of the drop tests.* (Photo: Boeing)

Right: *A WB-47B, converted from the bomber configuration, photographed in 1964 with special colouring.*
(Photo: Boeing)

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Below, right: *An early B-47E takes off on a test flight. Markings on fuselage are to aid photo-theodolite readings.*
(Photo: Boeing)

XB-47. Two prototypes, the first being flown on 17th December 1947, and the second on 21st July 1948. Both of these aircraft, ordered in April 1946, were built in the Boeing plant at Seattle, Washington, the only B-47s to be built there. Since the design was so new, testing of the first prototype proceeded very cautiously. By the time the second was ready to fly, so much confidence was gained that its first take-off from Boeing Field was made with the JATO bottles. In 1949 the 4,000-lb.-thrust J-35 engines of the first prototype were replaced with 5,200-lb.-thrust J-47s. Air Force serial numbers were *46–65* and *46–66*.

B-47A. Ten production versions of the modified No. 1 prototype. Actually, these were test and training models for both the military and the manufacturers, and were never intended to be combat-ready equipment. The first B-47A flew on 25th June 1950. Serial numbers *49–1900* to *49–1909*.

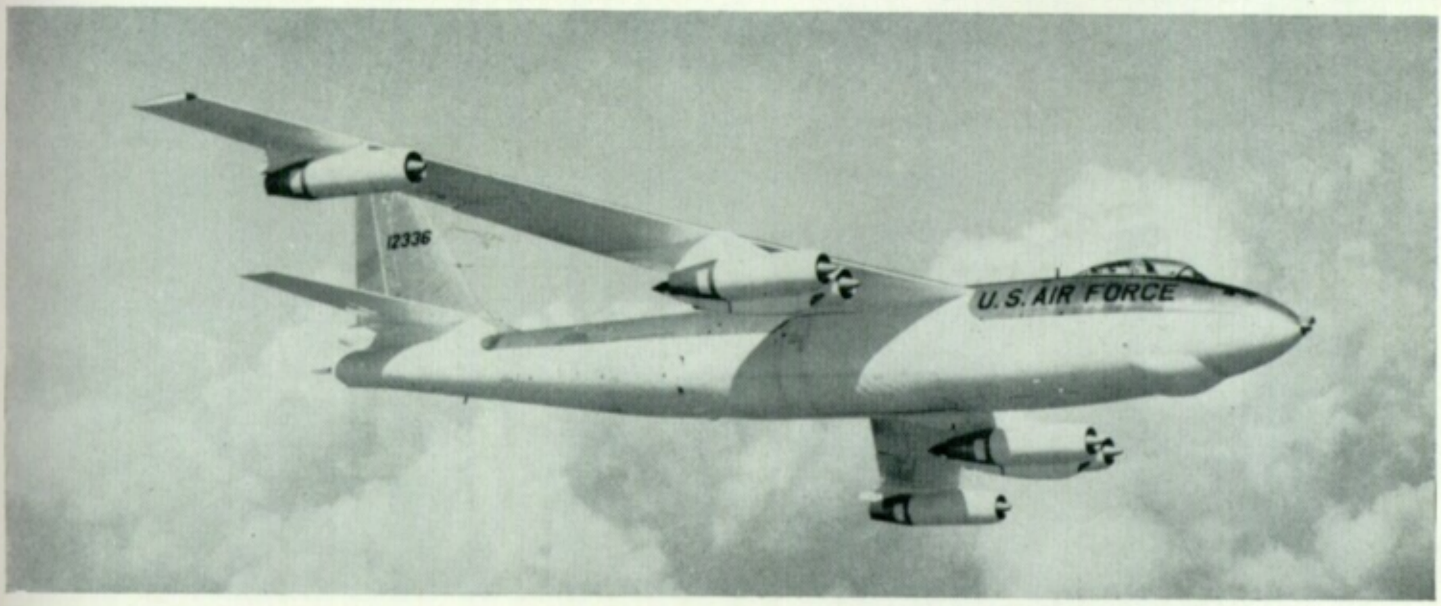
B-47B. The first true production B-47, with armed versions being supplied to the squadrons of the Strategic Air Force (SAC). More powerful J-47-GE-11 engines of 5,800-lb. thrust were fitted. The first of 399 B-47Bs flew on 26th April 1951.

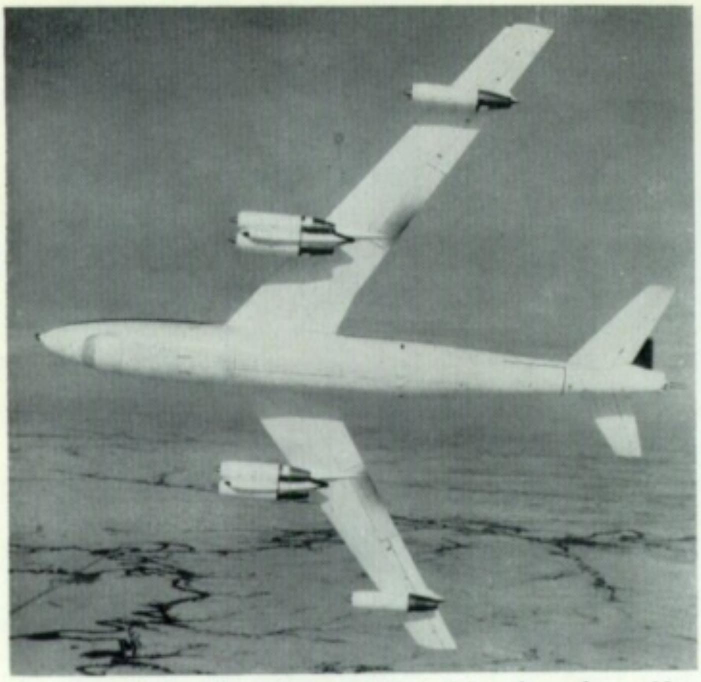
By the time the B-47B was being ordered, the U.S. Air Force decided that it needed B-47s in a greater quantity than the Boeing facilities could supply, so Lockheed and Douglas were signed up to produce the model in their own plants. The first B-47s turned out by these additional manufacturers were B-models, using parts supplied by Boeing. These aircraft were delivered with the Air Force serial numbers already assigned to Boeing. Air Force serial numbers for all the B-47s were: *49–2642* to *49–2646*; *50–1* to *50-82*; *51–2045* to *50–2356*.

The eight Lockheed-assembled B-47Bs had serial numbers *51–2197*, *2204*, *2210*, *2217*, *2224*, *2231*, *2237*, and *2243*. A ninth B-47B at Lockheed, *51–2145*, was used as a mock-up and was not flown. The ten Douglas-assembled B-47Bs had serial numbers *51–2141*, *2150*, *2155*, *2160*, *2165*, *2170*, *2175*, *2180*, *2185*, and *2190*.

B-47B-II. In 1954 the majority of SAC's B-47Bs

A B-47B-II in flight near the Boeing factory at Wichita, Kansas, in 1955. The white paint on the undersurfaces is to reduce the absorption of heat and radiation effects from nuclear blast.
(Photo: Boeing)





Anti-atom flash white paint on B-47 B-IIs' undersurfaces. Note lack of national markings. (Photo: Boeing)

were returned to the Boeing Wichita plant for a modernisation programme that brought them up to B-47E standard. Outwardly, the converted Bs could be distinguished from the Es only by their serial numbers so extensive was the re-work. These changes did not actually make the Bs into Es, but the change was reflected in the aeroplane model designation, which became B-47B-II.

YB-47C. The eighty-eighth B-47B, *50–92*, was to have been converted to use four 10,090-lb. thrust Allison J-71 engines in place of the six J-47-GEs and was to have been redesignated YB-56. This machine was to have photo and electronic reconnaissance equipment in place of bombs, and the powerplant and equipment changes were considered sufficient to justify a completely new aircraft designation. However, since the airframe was still that of a B-47, the designation was changed to YB-47C. The project was cancelled before completion and the four-jet version never materialised.

XB-47D. Two B-47Bs, *51–2046* and *51–2103*, were selected for conversion to XB-47D. This was not an attempt to develop an improved bomber—the machines were strictly flying test-beds for the new Wright YT-49-W-1 turbo-prop engines, which produced 9,710 equivalent shaft horsepower. These were the most powerful propeller-engines to fly at the time, and a single unit was installed in place of each pair of inboard J-47s. The outboard J-47s were retained. The first XB-47D made its first flight in July, 1955.

Early B-47E with in-flight refuelling receptacle in nose opened. (Photo: Boeing)

B-47E. An extensively improved version of the B-47B, of which 931 were built by Boeing, 385 by Lockheed, and 274 by Douglas. Early units retained the internal JATO and the port side nose windows of the B-47B, but the later ones deleted the windows and replaced the eighteen internal JATO bottles with thirty-three external units on a single rack that could be jettisoned. Two radar-directed 20-mm. cannon replaced the earlier machine gun armament and the nose section was completely redesigned to provide ejection seating for the crew and provide for in-flight refuelling by the Flying Boom system. Because of the IFR capability, the built-in fuel capacity was reduced to 14,610 gallons including the two 1,780 U.S. gallon drop tanks. Later J-47-GE-25 engines, with a thrust of 6,000 lb., were installed. These had the additional feature of water injection, which raised the thrust to 7,200 lb. for take-off. The first B-47E flew on 30th January 1953.

The Air Force serial numbers for all B-47Es are presented here in sequence of assignment, with the actual manufacturer indicated in parentheses. To save space, a stroke is used to indicate "to", as 1/5 for 1 to 5, inclusive: *51–2357/2445*, *51–5214/5257*, *51–7019/7083* (Boeing), *51–15804/15812* (Lockheed), *51–15821/15853* (Boeing), *52–118/120*, *52–146/201* (Douglas), *52–202/393* (Lockheed), *52–*

Boeing-built B-47E with auxiliary fuel tanks and the star-spangled blue band of a Strategic Air Command aircraft painted on the nose. (Photo: Peter M. Bowers)

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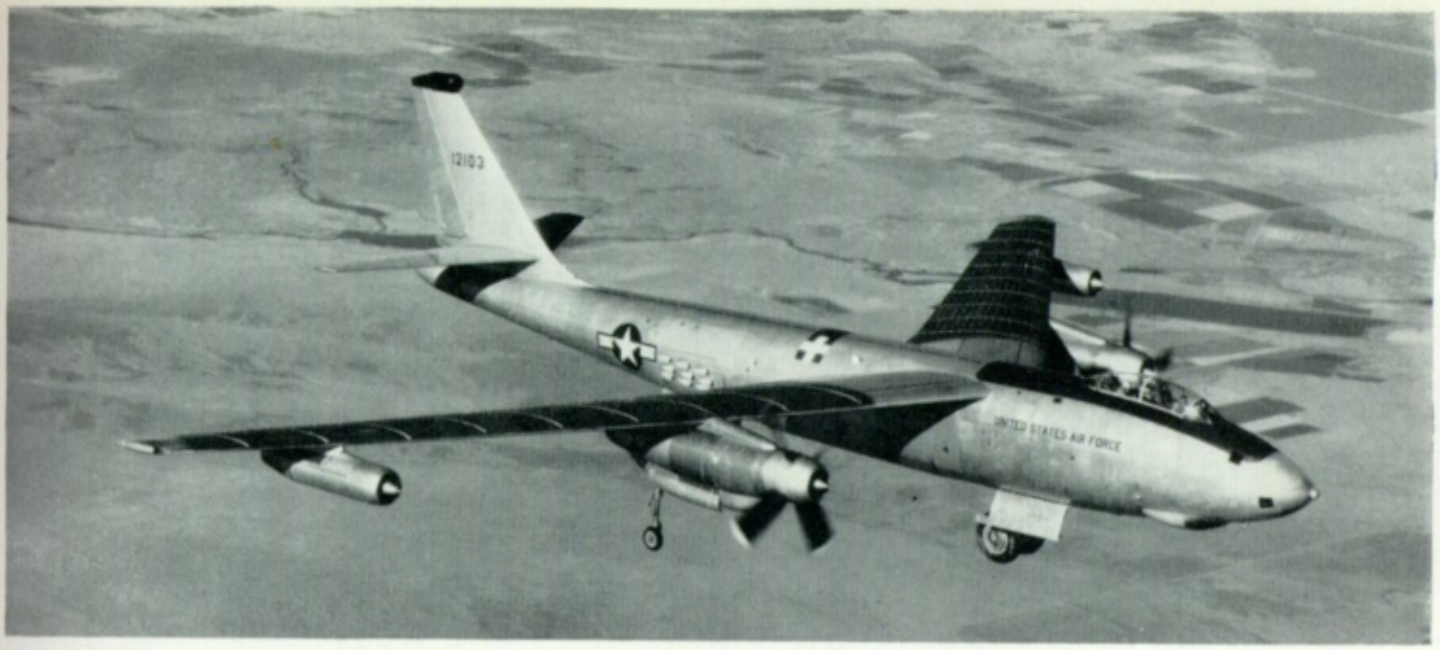
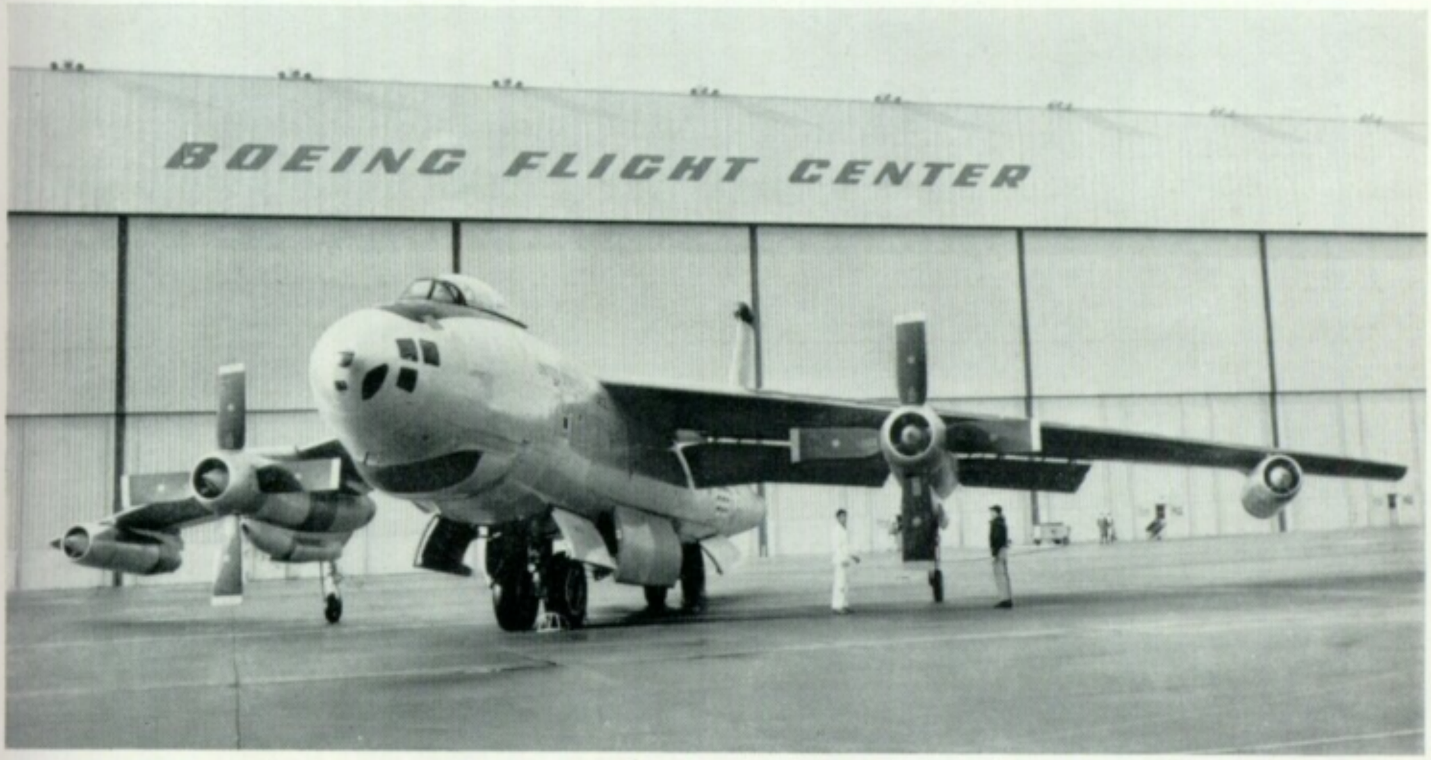
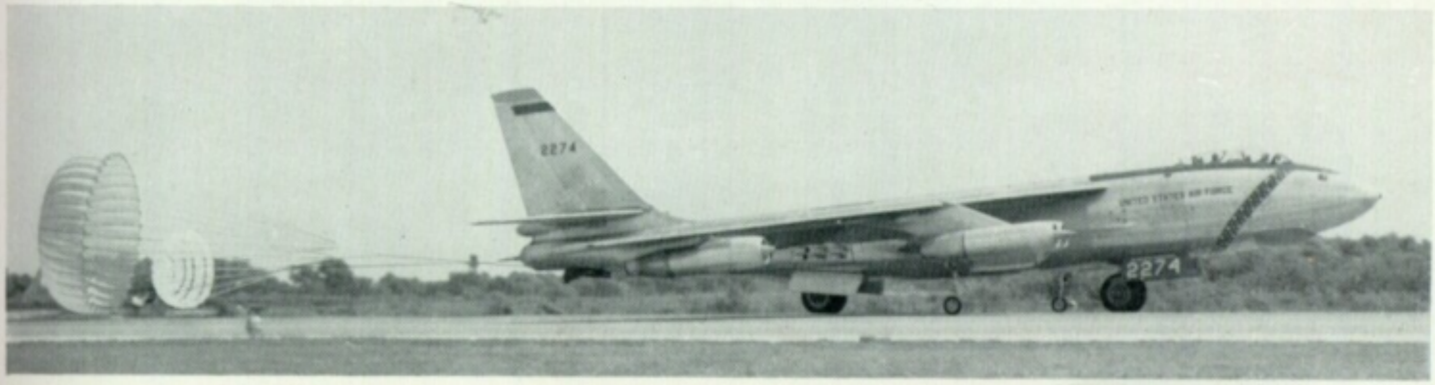


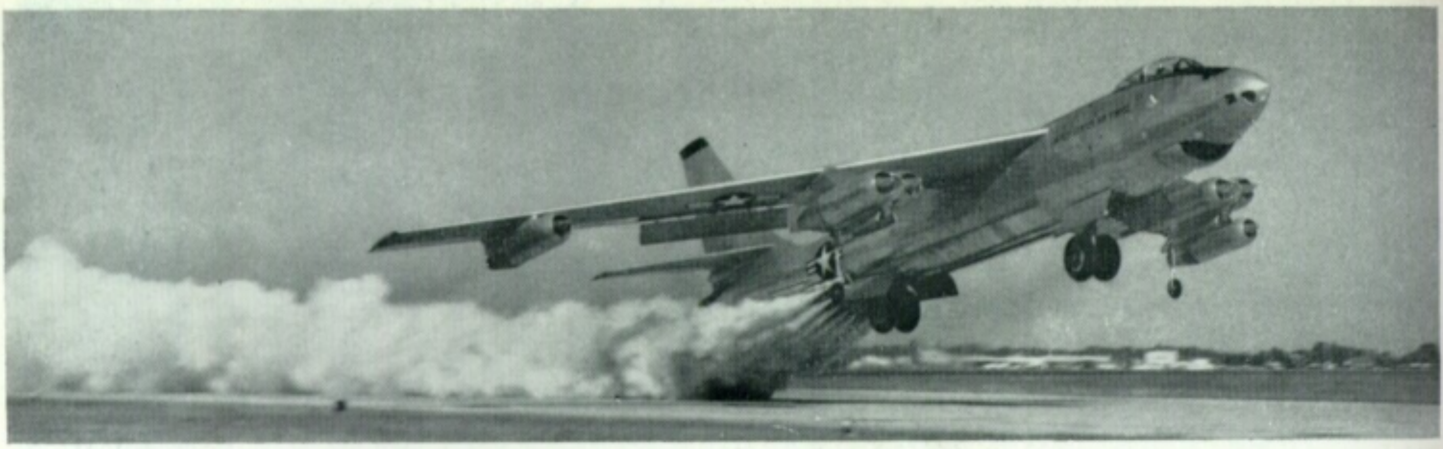
The first of two propeller-driven XB-47Ds on its first flight, August 1955. The XB-47Ds were B-47B airframes with Wright T-49 turbo-prop engines replacing each in-board pair of J-47 jets. (Photo: Boeing)



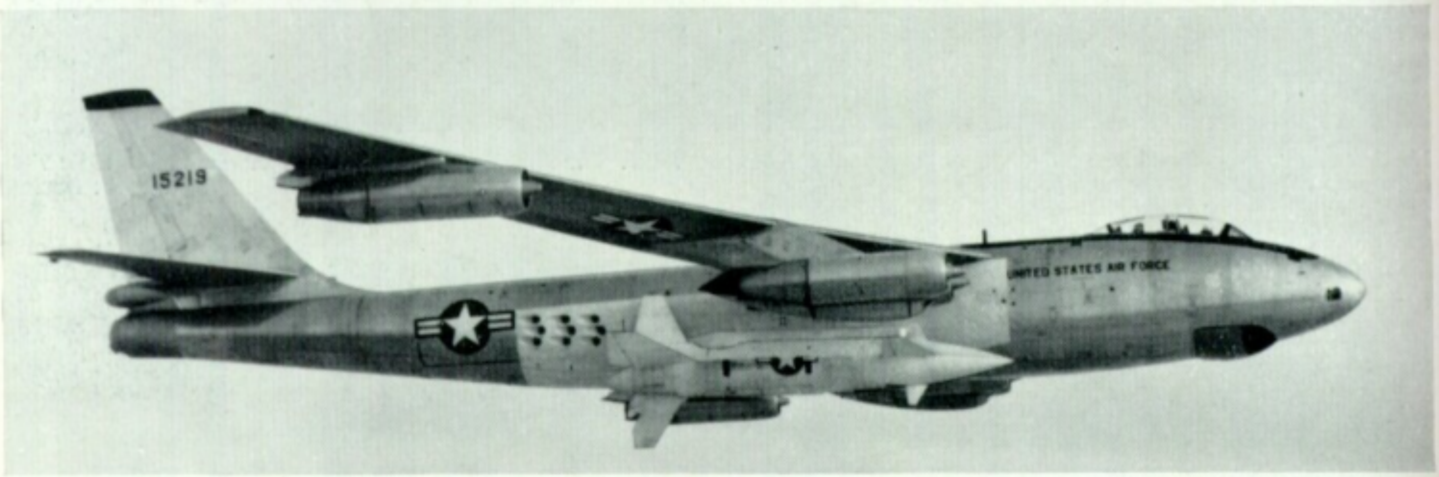
The four-bladed Curtiss turbo-electric propellers, each 15 feet in diameter and having "paddle-type" blades 24 inches wide, were used with the T-49s. Changes necessary to adapt the 600-mile-an-hour bombers for the test duties included removal of the original twin-jet inboard engine pods, modification of wing flaps to allow installation of the T-49s, and changes in instrumentation and controls for four engines rather than the normal six engines. (Photo: Boeing)

Lockheed-built B-47E-LM with both approach and decelerating parachutes still deployed near the end of the landing roll. (Photo: E. M. Sommerich)





B-47E taking off with the assistance of thirty-three externally-mounted JATO bottles. (Photo: Boeing)



YDB-47E carrying Bell GAM-63 "Rascal" missile. The white-painted area on the B-47 fuselage is to provide a good background for photos of the missile release during tests. (Photo: Boeing)

394/620 (Boeing), *52–3343/3373*, *53–1819/1972* (Lockheed), *53–2028/2040*, *53–2090/2170* (Douglas), *53–2261/2147*, *53–4207/4244*, *53–6193/6249* (Boeing).

RB-47E. While it was customary to add a special-mission prefix to standard models assigned to other than their basic mission, the RB-47Es were actually built for a different mission—long-range photo reconnaissance instead of bombing. However, no standard-type designation existed in the Air Force for such a mission at the time, so the supplemental designation was added to the B-for-Bomber designation. Up to 1948, when many Air Force types were redesignated, there had been an F-for-Photographic type, but most of the aircraft used in it were converted bombers (B-17s became F-9s and B-29s became F-13s). When the F designation was dropped, bombers converted to photo work became RBs. All of the 240 RB-47Es were built by Boeing, and could easily be distinguished from the standard bombers by their elongated noses and a return to the built-in JATO units. Up to eleven cameras, including night flash equipment, could be carried. The bombing equipment was deleted and the bombardier became the photographer

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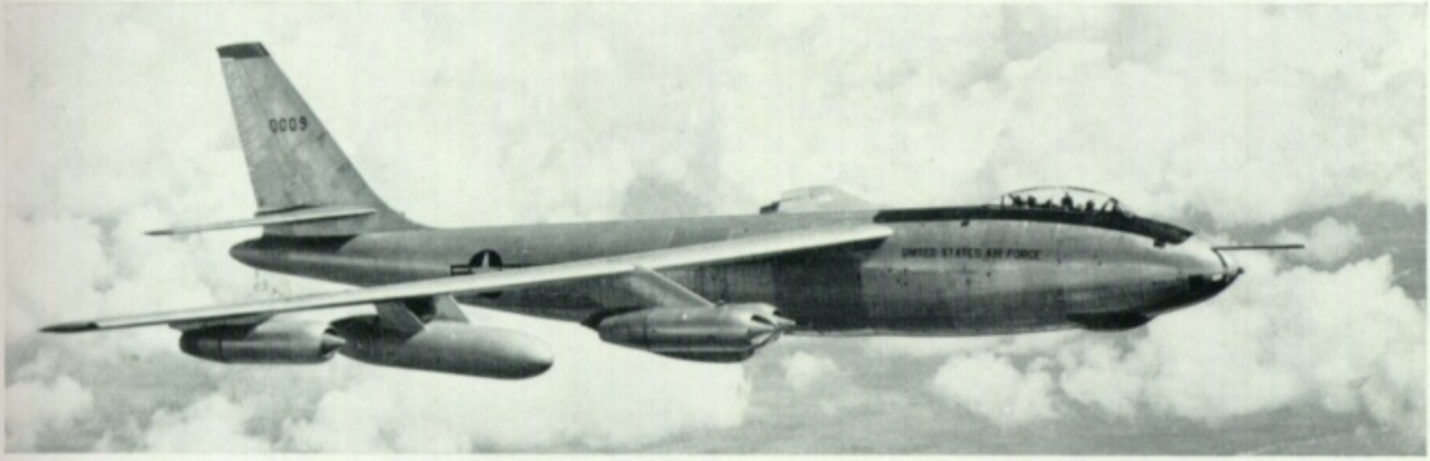
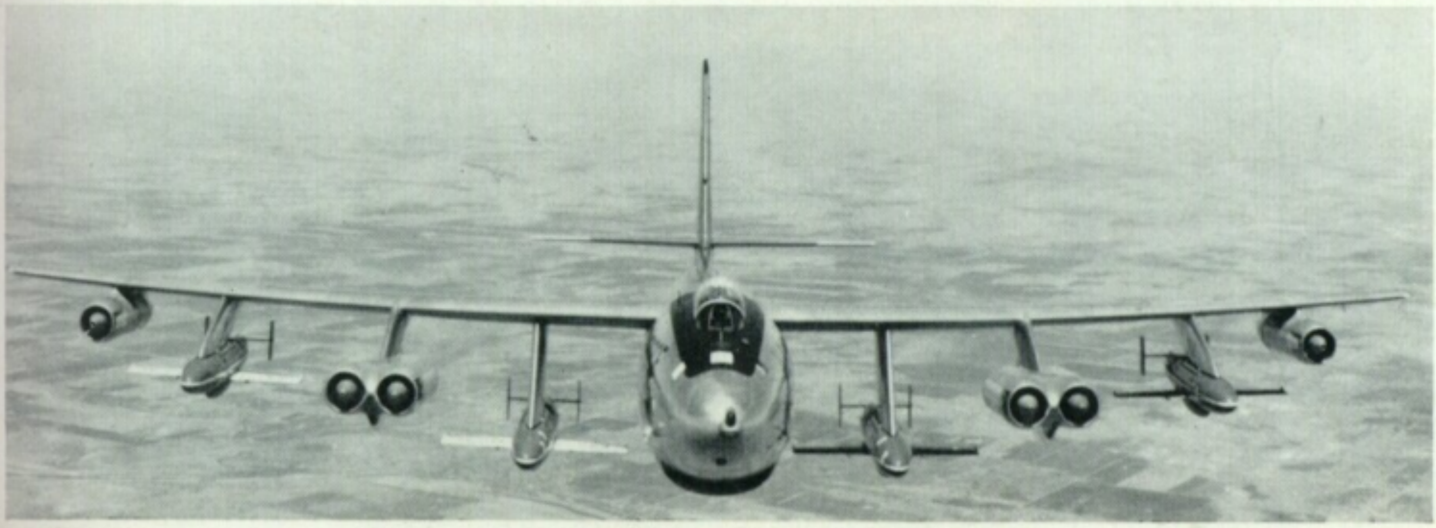
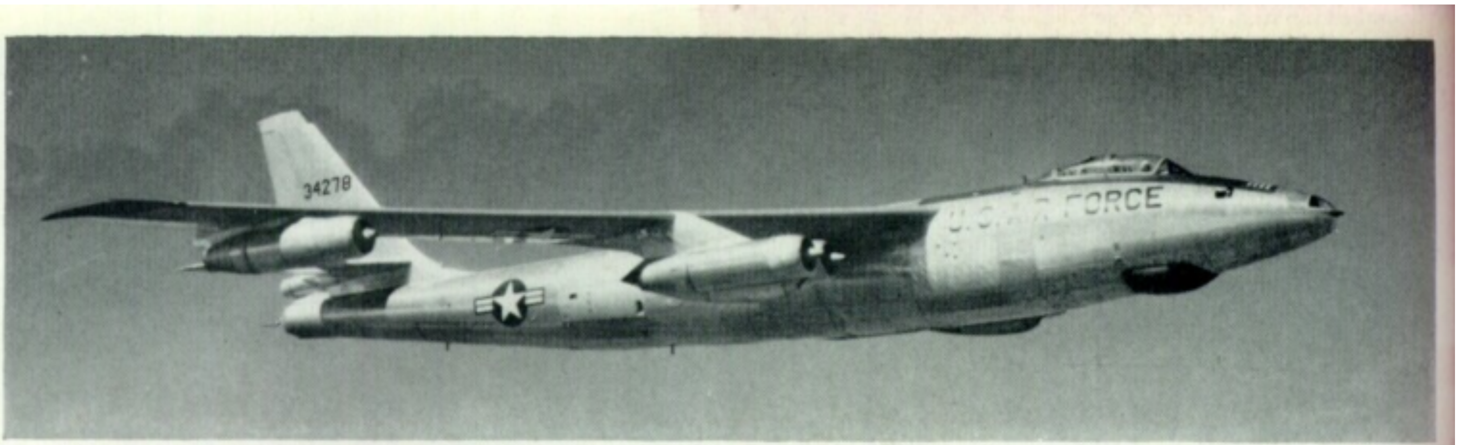
B-47E. Stress wrinkles can be seen under the wing leading-edge.

Above: *Colour study of a Strategic Air Command B-47E in flight.* Below: *The YB-47F fitted with IFR probe in 1952, to test the hose-and-drogue refuelling system.* (Photos: Boeing)



Below: *B-47 with four GAM-67 "Crossbows" mounted under wings.* (Photo: Boeing)





The RB-47Ks were started as RB-47Es but were redesignated prior to completion. (Photo: Boeing)

except in special versions where extra crew members were carried. Although the RB-47E could be refuelled in flight, the tankage was increased to a capacity of 18,405 U.S. gallons. Powerplants were the same as the standard B-47E. Air Force serial numbers *51–5258/5276*, *51–15821/15853*, *52–685/825*, *52–3374/3400*, *53–4245/4264*.

YB-47F. In 1952, one B-47B, *50–09*, was fitted with an IFR probe to test the suitability of the hose-and-drogue refuelling system for the B-47. The Flying Boom system proved more practical and was used for all subsequent B-47 and B-52 refuelling.

KB-47G. Another converted B-47B, *50–40*, used as the tanker for the YB-47F IFR experiments. The K prefix was assigned to the B-47G to indicate its status as a tanker.

RB-47H. Thirty-two Boeing-built B-47s were completed as RB-47H with first flight in June, 1955. These were used for electronic reconnaissance; detecting and locating surface radar stations. Normal crew was three, but three additional could be carried, some in the special equipment capsule in the bomb bay. U.S.A.F. serial numbers *53–4280/4309*, *6247*, *6248*.

B-47I. No "I" series letter was assigned, in keeping with U.S.A.F. policy of not using the letter "I" in designations because of possibility of confusion with the figure one.

YB-47J. A single standard bomber modified to serve as a test vehicle for the newly-developed MA-2 radar bombing-navigation system.

RB-47K. An additional fifteen RB-47Es were ordered for use in both weather and photo-reconnaissance missions, but because of differences in equipment details, these were redesignated RB-47K before completion. Serial numbers *53–4265/4279*.

EB-47L. In 1963, thirty-five obsolescent B-47Es were modified to become electronic communications aircraft that could serve as relay stations between other aircraft or between aircraft and ground communications stations.

CL-52. In 1956, the U.S.A.F. loaned a B-47B, *51–2059*, to the Royal Canadian Air Force as a test vehicle for the new 20,000-lb. thrust Orenda "Iroquois" jet engine. The R.C.A.F. turned the machine over to Canadair, Ltd., for modification. This company assigned its own model number of CL-52 to the project. The CL-52/B-47B was flown in R.C.A.F. markings but retained the last three digits of its U.S.A.F. serial number, which followed the prefix "X" to become the R.C.A.F. serial number.

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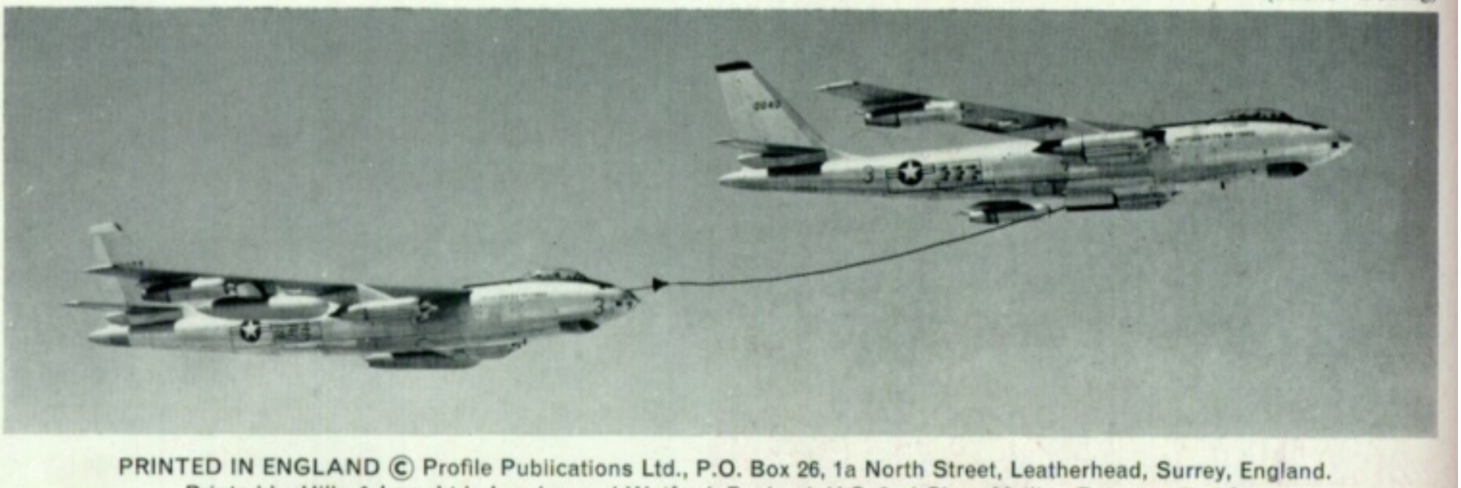
A QB-47E being guided to the ground controllers at the end of the runway by an airborne controller in the T-33 seen flying just off the right wingtip. (Photo: Boeing)

The YB-47F being refuelled from the KB-47G hose tanker. Both of these experimental machines were converted from B-47B airframes. (Photo: Boeing)



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